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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/772,752	02/05/2004	Marc O. Woontner	14460	5715
7590	01/13/2006		EXAMINER	
Maria Eliseeva Suite 4 4 Militia Drive Lexington, MA 02421			CHANG, AUDREY Y	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/772,752

Applicant(s)

WOONTNER, MARC O.

Examiner

Audrey Y. Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 and 12-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 11 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Remark*

- This Office Action is in response to applicant's amendment filed on November 18, 2005, which has been entered into the file.
- By this amendment, the applicant has amended claims 1-6, 11 and 15.
- **Claims 7-10 and 12-14 are withdrawn** from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention group, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 9, 2005.
- Claims 1-6, 11 and 15 remain pending in this application.
- The rejections to claims under 35 USC 112, first paragraph, set forth in the previous Office Action are withdrawn in response to applicant's amendment.

### *Claim Objections*

**1. Claims 1-6, 11 and 15 are objected to because of the following informalities:**

(1). The amended phrase "holographically and optically variably configured to diffract incoming light" recited in amended claims 1-3 and 11 are confusing and indefinite since it is not clear what is considered to be "holographically configured and optically variably configured". Does this mean that each panel is a hologram or contains a hologram for diffracting the incident light? Please specify. Since the claims are drawn to an article, a more positive identification not product-by-process type of language is needed for being considered. A method step in an article claim does not give palatable weight and does not remedy the claim from *lacking the essential structure recitation*.

(2). The amended phrase "each of angles ... is assigned a number" recited in the amended claim 5 is really confusing since this assigning "step" does not adds any structural limitation to an article claim.

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The scopes of the claim therefore are not determined. This phrase at this juncture really means *an arbitrary assignment* a number to each of the angles. Please specify what is the definite limitations being sought for patent here.

(3) **The amended phrase “YMCK”** recited in claims 1 and 11 is confusing and indefinite since it is not clear what does this phrase stand for? If “YMCK” stands for “yellow-magenta-cyan-black” then **claim 6 is objected to for it does not further limiting the claim.** But if it does not stand for such, then please specify what does it stand for? At this juncture it is being examined as “yellow-magenta-cyan-black”.

(4). **Claim 15 has been amended** to include the feature of “a plurality of *multi-layer* holographic pixels” that is very confusing since there is *no specific structural description* for this “multi-layer” structure. The term “multi-layer” therefore cannot be fully examined. Furthermore, it is not clear what is considered to be the “a *multi-layer images forming material*” in the **amended phrase**. The scopes of the claims therefore are not clear. The applicant is also respectfully reminded that the **product-by-process limitation** of the claim is **not given** any patentable weight if it does not distinguish the final product from prior art reference.

**Appropriate correction is required.**

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. **Claims 1-3, 5-6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice (PN. 5,396,839).**

Rice teaches a *multi-layer material or structure* for forming an *image*, (please see Figure 7, columns 8-9) that is comprised of *an embossed layer* (55, Figures 8-11) and a printing stock. The structure comprises a *plurality of panels* that is embossed with diffraction gratings (56) wherein the diffraction gratings are capable of diffracting and reflecting one of the primary colors respectively. The plurality of panels is *tinted* with ink (54), wherein the ink may include one of primary colors (please see column 7, lines 45-50). As shown in Figure 7, Rice teaches that diffraction gratings embossed on the embossable layer are capable of diffracting and reflecting red, blue or green colors. By arranging the individual diffraction gratings in certain combination, Rice further teaches that additive effect can be achieved so that a plurality of panels, each having certain arrangement of pixels of the embossed diffraction grating structures, can be formed such that the plurality of panels is capable of diffracting and reflecting yellow, magenta, cyan, black or white colors *respectively*, (please see column 9, lines 19-60).

**Claims 1 and 11 have been amended** to include the features that the tint color is one of the yellow-magenta-cyan-black (YMCK) colors. Rice teaches that the ink (54) is applied to the printing plate (31) to create half-tone images, which become the composite image (48), may include various color such as yellow, magenta and cyan, (please see column 5, line 30-40). The ink (54) is then pressed onto surface (23) of the printing stock (22, Figure 1) together with the embossed layer form the plurality of panels.

**Claims 1 and 11 have be amended** to include that the feature that the panel is "holographically and optically variably configured to diffract incoming light". Rice teaches explicitly that the diffraction gratings are embossed by using mold and the diffraction pattern on the mold is formed by holographical method, (please see column 10, lines 21-40). This means that the diffraction gratings are holographically configured. The diffraction gratings are implicitly optically variable since different diffraction effects can be viewed from different angles of viewing.

This reference has met all the limitations of the claims with the exception that it does not teach *explicitly* that the individual panel diffracts and reflects the incoming light at a different angle. However Rice does teach *explicitly* that according to diffraction theory a diffraction grating inherently diffracts and reflects incoming light into *beams* of spectra, which means different color of light will be diffracted and observed at *different angle range*. Rice further teaches that the angle of diffraction and reflection of the incoming angle for the diffraction grating is determined by the grating structures such as the pitches and orientations of the grating grooves, (please see column 8 line 59 to column 9, line 18). It would then having been obvious to one skilled in the art, if this is not already of the case for the multi-layer structure of Rice, to make the individual panel that is designed to diffract different color of light to have the diffraction angle and therefore the reflection angle *different* from other panels for the benefit of allowing different color effect and decorative appearance being observed at different viewing angle. With regard to amended claim 5, one can certainly arbitrarily assign a number to different angles of diffraction for the panels.

**4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice as applied to claim 1 above, and further in view of patent issued to Mallik et al (PN. 5,085,514).**

The multi-layer structure for forming an image taught by Rice as described for claim 1 above has met all the limitations of the claim. This reference however does not teach explicitly to include the claimed layers. Mallik et al in the same field of endeavor teaches a layer structure for making replication of embossed microstructure wherein the layer structure include a web (111, Figure 11) serves as the thermal stable layer, a strip coating (197) serves as the wear resistant layer, an embossable layer (199) with embossed microstructure, a reflective layer (201) for overlaying the embossable layer and an adhesive layer (203) which is heat activated to adhere the multi-layer structure to a substrate (205, Figure 12, please see column lines 23-40). It would then have been obvious to one skilled in the art to apply the

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teachings of the layer structure of **Mallik et al** to modify the multi-layer structure of **Rice** to provide wear-resistant protection as well as adhesive means to make the multi-layer structure with image formed easily attached to desired substrate agent.

**5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rice (PN. 5,396,839).**

**Rice** teaches a *multi-layer material or structure* for forming an *image*, (please see Figure 7, columns 8-9) that is comprised of a plurality of *ink dots* (55, Figure 7), serves as the pixels, each dot is being embossed with a *diffraction grating* (56) that is capable of diffracting and reflecting incoming light in a *predetermined* diffraction angle, (please see Figure 7, columns 8-9). **Rice** teaches that the ink dots comprise ink (54) that includes one of the primary colors, (please see column 7, lines 45-50).

**Rice** teaches explicitly that the diffraction gratings are embossed by using mold and the diffraction pattern on the mold is formed by holographical method, (please see column 10, lines 21-40). This means that the diffraction gratings are holographically configured. The diffraction gratings are implicitly optically variable since different diffraction effects can be viewed from different angles of viewing.

**Claim 15 has been amended** to include the feature of “multi-layer holographic pixels”, however this structure for this “multi-layer” limitation is not explicitly stated. It can only be examined briefly. **Rice** teaches that the diffraction gratings formed on the ink dots (55) has a multi-layer structure as shown in Figures 8-11.

**Claim 15 has been amended** to include a product-by-process limitation concerning the method of forming the “multi-layer holographic pixels”. However this limitation is not given any patentable weight for it does not differentiate the product from the prior art, (please see MPEP 2173.05(p)).

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**6. Claims 1-6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Waitts (PN. 5,834,096) in view of the patent issued to Rice.**

*Claims 1 and 11 have been significantly amended that necessitates the new grounds of rejections.*

Waitts teaches a *multi-layer material* that is comprised of an *embossable* layer (32, Figures 1-3) wherein holographic indicia for providing different 3D effects (18 and 20) are formed on the embossable layer, (please see columns 3-4). It is implicitly true that the holographic indicia diffract light at a predetermined diffraction/reflection angles. Waitts teaches that different holographic effects can be reproduced which implicitly means that there are more than one panels each including a specific hologram.

Waitts further teaches that the embossable layer can be tinted, (please see column 5, lines 1-6). This reference however does not teach explicitly that the tint color is one of the yellow-magenta-cyan-black color. Rice in the same field of endeavor teaches printing method for making color image wherein different color pigments including yellow-magenta-cyan-black colors can be used to create different color effect., (please see column 1). It would then have been obvious to one skilled in the art to select one of the yellow-magenta-cyan-black color as the tint color for the benefit of creating the desired decorative effects.

These references have met all the limitations of the claims with the exception that they do not teach *explicitly* that the individual panel diffracts and reflects the incoming light at a different angle. However according to diffraction theory a holographic diffraction grating inherently diffracts and reflects incoming light according to the wavelength and orientations of the light beams for creating it. And the angle of diffraction and reflection of the incoming angle for the diffraction grating is determined by the grating structures such as the pitches and orientations of the grating grooves, it would having been obvious to one skilled in the art, to make the individual panel, having a specific hologram that is designed to present different 3D effects, to have different diffraction angle and therefore different reflection angle



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from each other for the benefit of allowing different 3D effect and decorative appearance being observed at different viewing angle.

With regard to claim 4, Waitts teaches that the multi-layer material further comprises a *heated pressed plate* (38, Figure 3) serves as the *thermally stable layer*, a *scuff coat* (36) serves as the *wear resistant layer or top coat*, a *reflective layer* (30) overlaid the embossed layer (32) and *adhesive layer* (28) that serves to attach the material to a *substrate* (26, Figure 3, column 4). Although this reference does not identify explicitly that the adhesive is heat activated however heat activated adhesive such as epoxy resin is very well known and well used in the art such modification would have been obvious to one skilled in the art for the benefit of using common adhesive to achieve the adherence purpose with less cost and good adhesive quality.

With regard to amended claim 5, one can certainly arbitrarily assign a number to different angles of diffraction for the panels.

### ***Response to Arguments***

11. Applicant's arguments filed on November 18, 2005 have been fully considered but they are not persuasive.

7. In response to applicant's arguments which states that the cited Rice reference does not teach "a multi-layer material *tinted embossed layer*" as recited in claims 1 and 11, which therefore differs from the instant application, the examiner respectfully disagrees since the feature the applicant relied upon is NOT recited in the claims and therefore cannot be used to overcome the rejection. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The applicant is also respectfully

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noted that Rice teaches that the diffraction grating in the embossed layer is formed on the ink printed stock. The ink (54) certainly would tint the diffraction grating layer by contact and by appearance.

*Conclusion*

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

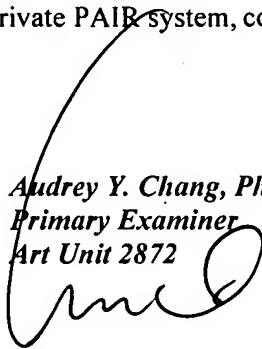
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*Audrey Y. Chang, Ph.D.*  
*Primary Examiner*  
*Art Unit 2872*



A. Chang, Ph.D.